

# Lecture 4 - Java Graphical User Interface (GUI): JavaFX Part I

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CSC-1004: Computational Laboratory Using Java  
Course Page: [\[Click\]](#)

# JavaFX

- JavaFX is a Java library used to **develop Desktop applications** as well as **Rich Internet Applications (RIA)**.
- The applications built in JavaFX, can **run on multiple platforms** including Web, Mobile and Desktops.



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# JavaFX

JavaFX **features** include:

- **A set of graphics and media packages:** It provides a powerful 2D and 3D graphics engine that allows developers to create rich content applications.
- **Scene Builder:** A visual layout tool for designing JavaFX application interfaces.
- **Rich Set of UI Components:** like buttons, text fields, tables, trees, tabs, charts, and more, which can be easily integrated into applications.

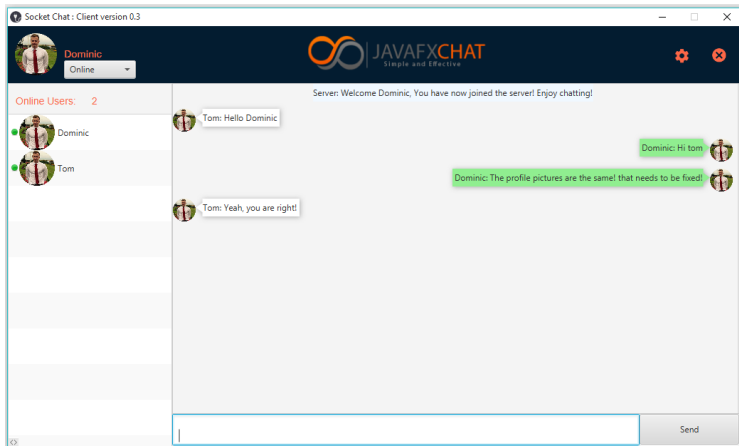


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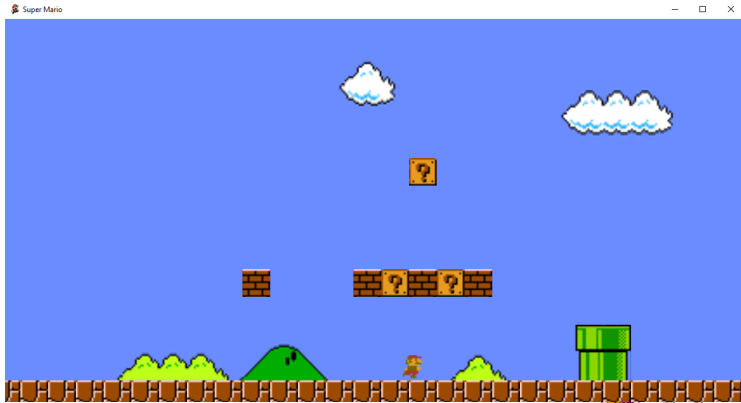
# JavaFX

## JavaFX Applications Example 1: Chatroom (GitHub Project)



# JavaFX

## JavaFX Applications Example 2: SuperMario (GitHub Project)

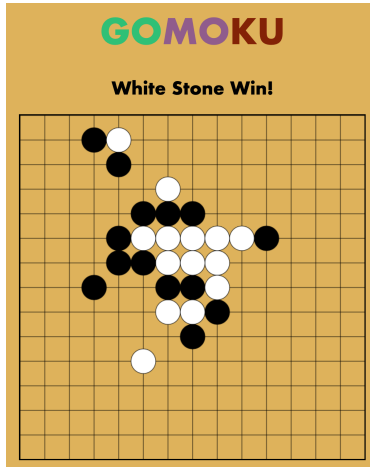


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JavaFX **Applications** Example 3: **Gomoku**(Example Project will be released later)

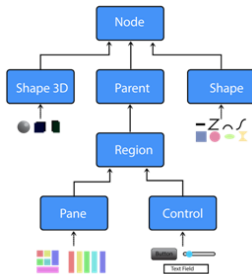
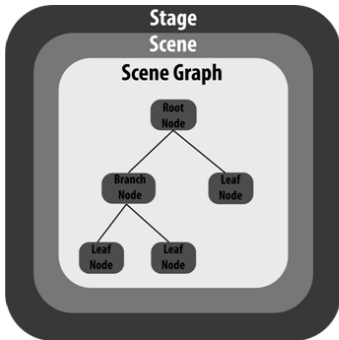


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# JavaFX Application Structure

JavaFX application is divided into **Stages**, **Scenes** and **nodes**.

- **Stage** acts like a **container** for all the JavaFX objects.



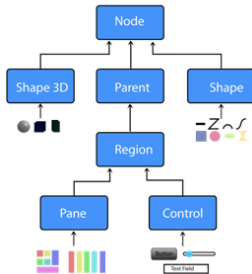
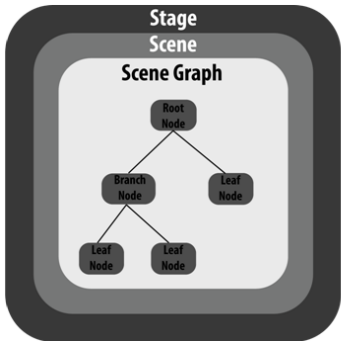
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# JavaFX Application Structure

JavaFX application is divided into **Stages**, **Scenes** and **nodes**.

- **Scene** holds all the physical contents (nodes) of a JavaFX application. The object of the primary stage is passed to the `start()` method. We need to call `show()` method on the **primary stage object** to show our primary stage.



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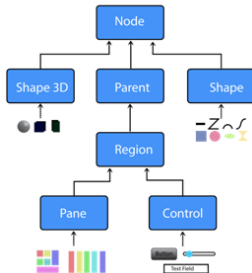
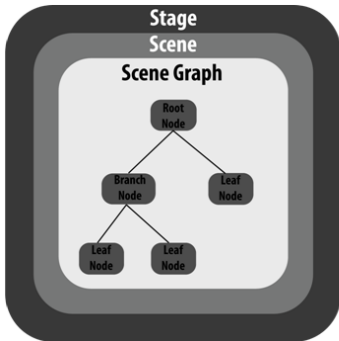
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# JavaFX Application Structure

JavaFX application is divided into **Stages**, **Scenes** and **nodes**.

- **Scene Graph** can be seen as the collection of various **nodes**. A node is an **element that is visualized on the stage**. It can be any button, text box, layout, image, radio button, check box, etc.



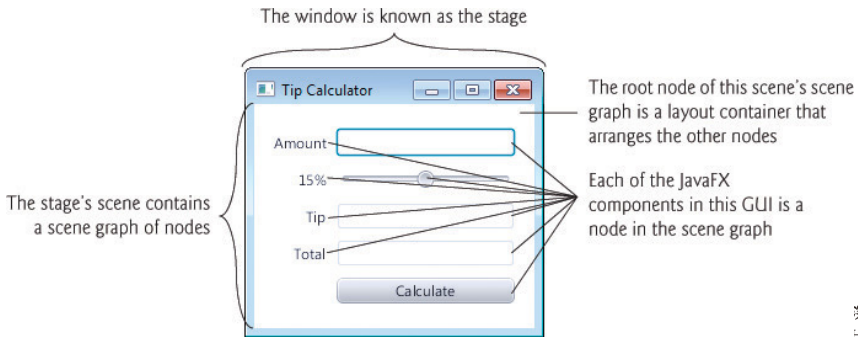
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# JavaFX Application Structure

JavaFX application is divided into **Stages**, **Scenes** and **nodes**.

- An example of **JavaFX structure**.



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# JavaFX Application Example

A **JavaFX application** that prints **hello world** on the console by clicking the button.

- **Step 1:** Extend `javafx.application.Application` and override `start()`.

```
package application;
import javafx.application.Application;
import javafx.stage.Stage;
public class Hello_World extends Application{

    @Override
    public void start(Stage primaryStage) throws Exception {
        // TODO Auto-generated method stub

    }
}
```



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# JavaFX Application Example

A **JavaFX application** that prints **hello world** on the console by clicking the button.

- **Step 2:** Create a **Button**.

```
package application;
import javafx.application.Application;
import javafx.scene.control.Button;
import javafx.stage.Stage;
public class Hello_World extends Application{

    @Override
    public void start(Stage primaryStage) throws Exception {
        // TODO Auto-generated method stub
        Button btn1=new Button("Say, Hello World");

    }
}
```



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# JavaFX Application Example

A **JavaFX application** that prints **hello world** on the console by clicking the button.

- **Step 3:** Create a **layout** and add a button to it.

```
package application;
import javafx.application.Application;
import javafx.scene.control.Button;
import javafx.stage.Stage;
import javafx.scene.layout.StackPane;
public class Hello_World extends Application{

    @Override
    public void start(Stage primaryStage) throws Exception {
        // TODO Auto-generated method stub
        Button btn1=new Button("Say, Hello World");
        StackPane root=new StackPane();
        root.getChildren().add(btn1);
    }
}
```



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# JavaFX Application Example

A **JavaFX application** that prints **hello world** on the console by clicking the button.

- **Step 4:** Create a **Scene**.

```
package application;
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.stage.Stage;
import javafx.scene.layout.StackPane;
public class Hello_World extends Application{

    @Override
    public void start(Stage primaryStage) throws Exception {
        // TODO Auto-generated method stub
        Button btn1=new Button("Say, Hello World");
        StackPane root=new StackPane();
        root.getChildren().add(btn1);
        Scene scene=new Scene(root);
    }
}
```



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# JavaFX Application Example

A **JavaFX application** that prints **hello world** on the console by clicking the button.

- **Step 5:** Prepare the **Stage**.

```
package application;
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.stage.Stage;
import javafx.scene.layout.StackPane;
public class Hello_World extends Application{

    @Override
    public void start(Stage primaryStage) throws Exception {
        // TODO Auto-generated method stub
        Button btn1=new Button("Say, Hello World");
        StackPane root=new StackPane();
```

```
        root.getChildren().add(btn1);
        Scene scene=new Scene(root);
        primaryStage.setScene(scene);
        primaryStage.setTitle("First JavaFX Application");
        primaryStage.show();
    }
}
```



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# JavaFX Application Example

A **JavaFX application** that prints **hello world** on the console by clicking the button.

- **Step 6:** Create an **event** for the button.

```
package application;
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.stage.Stage;
import javafx.scene.layout.StackPane;
public class Hello_World extends Application{

    @Override
    public void start(Stage primaryStage) throws Exception {
        // TODO Auto-generated method stub
        Button btn1=new Button("Say, Hello World");
        btn1.setOnAction(new EventHandler<ActionEvent>() {
```

```
        @Override
        public void handle(ActionEvent arg0) {
            // TODO Auto-generated method stub
            System.out.println("hello world");
        }
    });
    StackPane root=new StackPane();
    root.getChildren().add(btn1);
    Scene scene=new Scene(root,600,400);
    primaryStage.setScene(scene);
    primaryStage.setTitle("First JavaFX Application");
    primaryStage.show();
}
}
```



# JavaFX Application Example

A **JavaFX application** that prints **hello world** on the console by clicking the button.

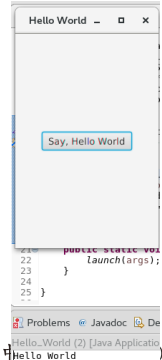
```
public class Hello_World extends Application{

    @Override
    public void start(Stage primaryStage) throws Exception {
        // TODO Auto-generated method stub
        Button btn1=new Button("Say, Hello World");
        btn1.setOnAction(new EventHandler<ActionEvent>() {

            @Override
            public void handle(ActionEvent arg0) {
                // TODO Auto-generated method stub
                System.out.println("hello world");
            }
        });
    }
};
```

```
StackPane root=new StackPane();
root.getChildren().add(btn1);
Scene scene=new Scene(root,600,400);
primaryStage.setTitle("First JavaFX Application");
primaryStage.setScene(scene);
primaryStage.show();
}

publicstaticvoid main (String[] args)
{
    launch(args);
}
}
```



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# Question and Answering (Q&A)



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